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WELCOA'S ONLINE BULLETIN FOR YOUR FAMILY'S SAFETY

MAPPING LANGUAGE PROBLEMS IN THE BRAIN

We often use language to communicate our knowledge and beliefs. But such communication can be challenging for up to 8 million people nationwide who have some form of language impairment.

To learn more about how language is organized in the brain, an NIH-funded research team studied people with a type of language impairment known as aphasia. Aphasia can arise after injury to the brain regions that help people express and understand language. The condition can occur suddenly—for example, from stroke or head injury. It can also develop slowly, from a brain tumor, an infection, or dementia.

Anyone can acquire aphasia, including children, but most people who have aphasia are middle-aged or older. Men and women are equally affected. According to the National Aphasia Association, approximately 80,000 individuals acquire aphasia each year from strokes. About one million people in the United States currently have aphasia.

WHAT TYPES OF APHASIA ARE THERE?

There are two broad categories of aphasia: fluent and non-fluent.

Damage to the temporal lobe (the side portion) of the brain may result in a fluent aphasia called Wernicke's aphasia (see figure). In most people, the damage occurs in the left temporal lobe, although it can result from damage to the right lobe as well. People with Wernicke's aphasia may speak in long sentences that have no meaning, add unnecessary words, and even create made-up words. For example, someone with Wernicke's aphasia may say, "You know that smoodle pinkered and that I want to get him round and take care of him like you want before." As a result, it is often difficult to follow what the person is trying to say. People with Wernicke's aphasia usually have great difficulty understanding speech, and they are often unaware of their mistakes. These

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individuals usually have no body weakness because their brain injury is not near the parts of the brain that control movement.

A type of non-fluent aphasia is Broca's aphasia. People with Broca's aphasia have damage to the frontal lobe of the brain. They frequently speak in short phrases that make sense but are produced with great effort. They often omit small words such as "is," "and," and "the." For example, a person with Broca's aphasia may say, "Walk dog," meaning, "I will take the dog for a walk," or "book book two table," for "There are two books on the table." People with Broca's aphasia typically understand the speech of others fairly well. Because of this, they are often aware of their difficulties and can become easily frustrated. People with Broca's aphasia often have right-sided weakness or paralysis of the arm and leg because the frontal lobe is also important for motor movements.

HOW IS APHASIA DIAGNOSED?

Aphasia is usually first recognized by the physician who treats the person for his or her brain injury. The physician typically performs tests that require the person to follow commands, answer questions, name objects, and carry on a conversation.

If the physician suspects aphasia, the patient is often referred to a speech-language pathologist, who performs a comprehensive examination of the person's communication abilities. The examination includes the person's ability to speak, express ideas, converse socially, understand language, read, and write, as well as the ability to swallow and to use alternative and augmentative communication.

HOW IS APHASIA TREATED?

In some cases, a person will completely recover from aphasia without treatment. This type of spontaneous recovery usually occurs following a type of stroke in which blood flow to the brain is temporarily interrupted but quickly restored, called a transient ischemic attack. In these circumstances, language abilities may return in a few hours or a few days.

For most cases, however, language recovery is not as quick or as complete. While many people with aphasia experience partial spontaneous recovery, in which some language abilities return a few days to a month after the brain injury, some amount of aphasia typically remains. In these instances, speech-language therapy is often helpful. Recovery usually continues over a two-year period. Many health professionals believe that the most effective treatment begins early in the recovery process.